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The Commonwealth of Massachusetts Division of Fisheries & Wildlife



Natural Heritage News

The newsletter of the Massachusetts Natural Heritage & Endangered Species Program
Conserving the Biological Diversity of Massachusetts through Inventory, Protection and Stewardship

Fall 2001



BioMap Guiding Land Conservation for Biodiversity in Massachusetts

MAPPING THE BIODIVERSITY OF MASSACHUSETTS

BioMap Goal: To promote strategic land protection by producing a map showing areas that, if protected, would provide suitable habitat over the long term for the maximum number of Massachusetts' terrestrial and wetland plant and animal species and natural communities.

To do so, Natural Heritage staff

- conducted a thorough evaluation of over 7000 current records in the Program's biodiversity database;
- created a map representing the **most viable** exemplary natural communities and habitat for rare plant and animal species, as well as landscape areas that buffer and connect core habitat areas, and which help maintain ecological processes upon which the species and communities depend; and
- are now distributing the BioMap to towns, state agencies, regional planners, and conservation organizations.

Turn to page 3 for more detail on the BioMap Project.

In the spring of 2000, the Executive Office of Environmental Affairs (EOEA) provided special funding to the Natural Heritage & Endangered Species Program (NHESP) to develop the BioMap, an innovative conservation planning tool. The BioMap Project goal was to produce a statewide map to guide the protection of Massachusetts' biodiversity. Secretary of EOEA Bob Durand said "The BioMap is an excellent new source of information for those involved in the ongoing effort to protect biodiversity in Massachusetts."

After a comprehensive evaluation of our extensive data base, the Natural Heritage Program identified and mapped the areas crucial to the state's rare species and exemplary natural communities resulting in the BioMap. This exciting tool for guiding the conservation of biodiversity in Massachusetts was released in August. The BioMap presents our vision for land conservation for biodiversity in Massachusetts, and provides a snapshot of the state of our biological conservation knowledge in the summer of 2001.

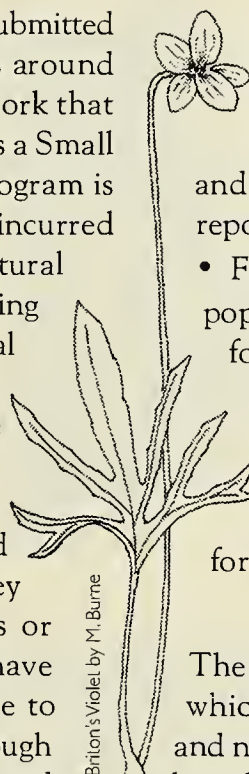
(see page 3 for more details)

Small Research Contracts

Small Research Contracts Overview

The NHESP relies on information that is submitted to our database, often from local naturalists around the state. To help support some of the field work that results in this useful data, NHESP administers a Small Research Contracts (SRC) program. The program is set up to reimburse contractors for expenses incurred while looking for rare species or priority natural communities, and provides a conduit for funding special projects, such as inventories of federal flood control properties and military bases.

Over the years, SRC contractors have updated species occurrences, found new occurrences of rare species, reported problems at rare species sites, and reported on the habitats in which they are found. They have intensively studied particular species or natural community types. The contractors have added records to our database and continue to help us protect the biodiversity of the state through the increased knowledge of the distribution and habitat needs of rare species. Many of the reports are used for years after submission by NHESP staff, land managers and local boards and commissions.



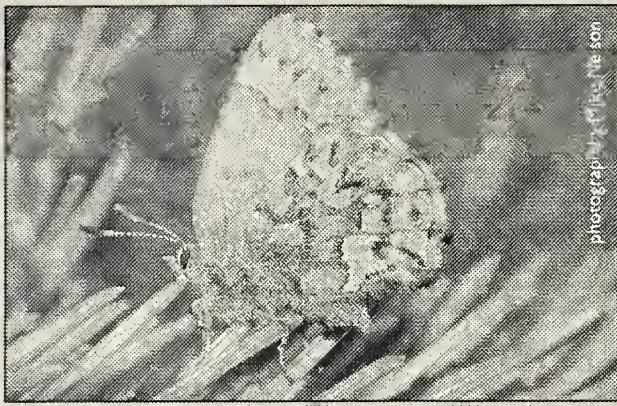
2001 SRC Projects and Results

In 2001, twenty-six contracts were awarded, supporting a variety of projects. A master's thesis project will provide important information on the **American Burying Beetle** a federally Endangered species. The project studies the population that has resulted from 7 years of releasing adults on Nantucket, and will also include continued releases to supplement that population. Early reports for other projects include the following exciting results:

- Five new sites for **Long's Bulrush** Endangered in Massachusetts; two new populations of **River Bulrush** a Species of Special Concern; and a new site for the rare **Britton's Violet** plus two new exemplary natural community locations.
- The second record of a female "head-started" **Plymouth Redbelly Turtle** (state and federally listed as Endangered) laying eggs. Over 500 eggs were protected from predators, and about 100 eggs were collected for additional head-starting.

Request For Proposals

The NHESP will soon be writing the 2002 SRC Request for Proposals (RFP) which will be mailed out in early January. Proposals will be due in February, and notification made in March. The RFP includes NHESP's priorities for projects but always includes the invitation to submit other proposals. The NHESP will mail the SRC RFP to interested individuals and institutions and post the information on our web site. For additional information and to obtain a copy of the RFP, contact at **natural.heritage@state.ma.us** at (508) 792-7270, ext. 200.



A new locality for the **Bog Elfin *Callophrys lanoraieensis*** was found this spring in Rutland. The Bog Elfin has a restricted global range and is dependent entirely upon Black Spruce swamps and bogs. It will likely be proposed for listing as a rare species in the near future. This record, along with a population found in Petersham several years ago, represents the southernmost populations known for this species.

Evidence of Massachusetts' second breeding colony of **Leach's Storm-petrel *Oceanodroma leucorhoa*** was found in June, 2001. Three birds were heard making breeding calls from nest burrows within stone walls on No Man's Island. This, along with the breeding colony on Penikese Island, represents the southernmost occurrence of this pelagic bird that is Endangered in Massachusetts.

Intricate Fairy Shrimp *Eubrachyus intricatus*

It's not too soon to start planning early spring field work! The Program is very interested in getting new records of the intricate fairy shrimp. If you would like to help us find these uncommon vernal pool inhabitants, please contact Matt Burne at (508) 792-7270 ext. 307.

The first occurrence in Massachusetts of the **Cobblestone Tiger Beetle *Cicindela marginipennis***



artwork by Matt Burne

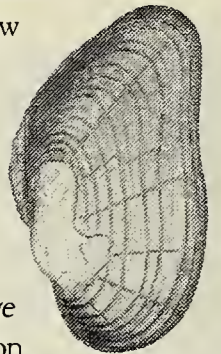
was confirmed in 2001. This globally restricted species will likely be proposed for listing now that it is known from the state. Its habitat is limited to cobblestone islands and deltas along major rivers.

The **Dwarf Wedgemussel *Alasmodonta heterodon***

listed as Endangered in Massachusetts and by the federal government - was believed extirpated from one of the few known localities in the state after last being recorded in the 1970's.

However, a Small Research Contract (see page 6) with biologist Don Pugh in 2000 yielded

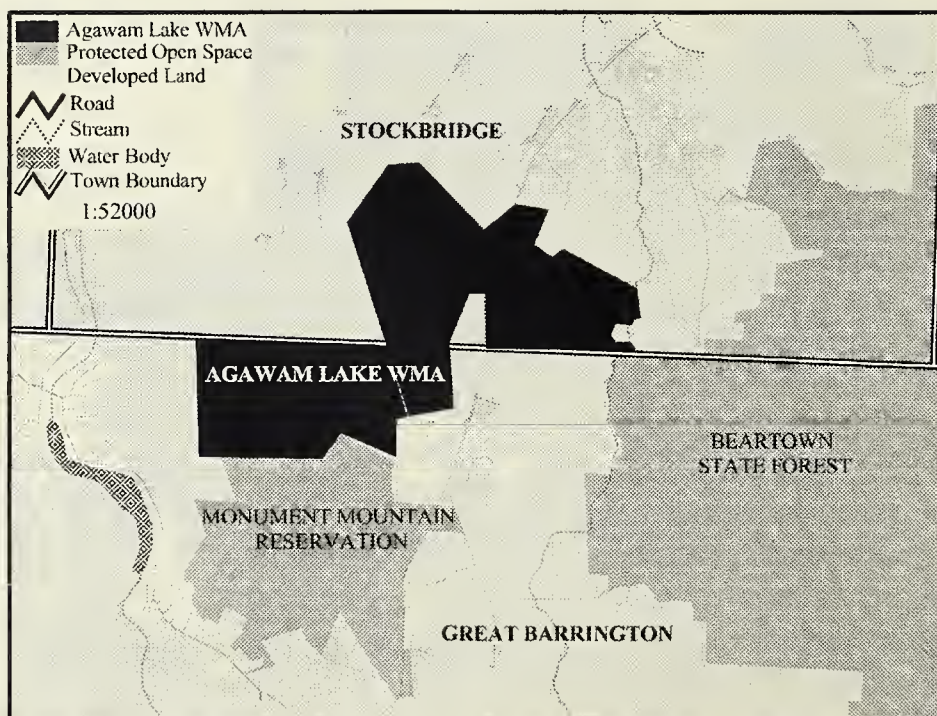
a new record of this rare mussel in the Fort River. Though only a couple of individuals were found at one location, hopes of finding more throughout the river have been raised. The NHESP will be funding additional survey work in the Fort to bolster this exciting new find.



artwork by Ethan Nadeau

Land Acquisition Highlights

In fiscal year 2001, the Massachusetts Division of Fisheries & Wildlife (of which NHESP is a part) protected over 12,000 acres of land across the state. These most recent acquisitions bring the Division's total holdings to more than 120,000 acres. About 2300 acres in 19 of these recent acquisitions are home to rare species and exemplary natural communities. This rapid rate of protection will continue through the current fiscal year, as EOEA Secretary Bob Durand is avidly pursuing Governor Swift's goal of protecting 50,000 more acres state-wide by all state agencies.



Monument Mountain/Agawam Lake

701 acres of Monument Mountain and Agawam Lake in *Great Barrington* and *Stockbridge* were protected by the Division of Fisheries & Wildlife in cooperation with the Stockbridge Land Trust. The property, acquired from Swann Realty Trust for \$1.14 million, contains a variety of natural communities including a calcareous seepage swamp, calcareous fen, rich mesic woods, rocky cliffs, calcareous ledges, and talus slopes that together support six known state-listed rare plants. Close proximity to a variety of state and local government, as well as private, conservation lands greatly adds to the value of this acquisition for the conservation of rare animals, plants, and natural communities.



Salisbury Marshes 310 acres in *Salisbury* near the mouth of the Merrimack River were bought in May of 2001, protecting excellent salt marsh as well as nearby uplands. Bald Eagles (Endangered in Massachusetts) use the river, its islands, tidal creeks, and wooded islands within the salt marsh for wintering, feeding, and roosting. Overall, this salt marsh, acquired from New England Power Company, supports two rare plants, Eastern Saline Sedge (Endangered) and American Sea-blite (Special Concern), along with three watch-listed plants.

NHESP FY02 OPERATING BUDGET CUT

THE MUCH-DELAYED ANNUAL STATE BUDGET FOR FISCAL YEAR 2002 (7/1/01-6/30/02) IS FINALLY ON THE GOVERNOR'S DESK. THE NATURAL HERITAGE PROGRAM RECEIVED A 7% DECREASE OVER THE LEVEL IN THE PROVISIONAL FY02 BUDGET THAT HAD BEEN USED TO ESTABLISH PROGRAM PRIORITIES AND SPENDING PLANS. THE PROGRAM'S TOTAL APPROPRIATION OF \$739,330 AMOUNTS TO A 4.75% DECREASE OVER LAST YEAR'S OPERATING BUDGET, WHICH HAD ALREADY BEEN CUT 1.7% FROM FY00 LEVELS.

The significant cut to the NHESP operating budget will force a temporary hold on:

- * the *Natural Heritage Atlas of Estimated Habitats of Rare Wildlife and Certified Vernal Pools & Priority Habitats of Rare Species*. Originally expected in January 2002, production will be pushed to July. The current *Natural Heritage Atlas* will remain in effect until then; and
- * the *Natural Heritage News* newsletter will not be produced in the spring of 2002.



THE BIOMAP METHODOLOGY

The NHESP created the BioMap by identifying, mapping, and prioritizing areas critical to the long-term conservation of Massachusetts' biodiversity. We began with a systematic review of over 7,000 records in the Natural Heritage database. Program scientists considered the degree of rarity of the state's species and natural communities, assessed the viability of occurrences across the state, and mapped the highest quality natural communities and rare species habitats. Finally, occurrences were coalesced

into a land protection blueprint, to be used proactively by conservation practitioners around the state. This intensive process resulted in the mapping of 1,160,000 acres of **Core Habitat**. Sophisticated geographical analysis resulted in the mapping of an additional 970,000 acres of **Supporting Natural Landscapes** which provide critical support for important ecological functions of the Core Habitats.

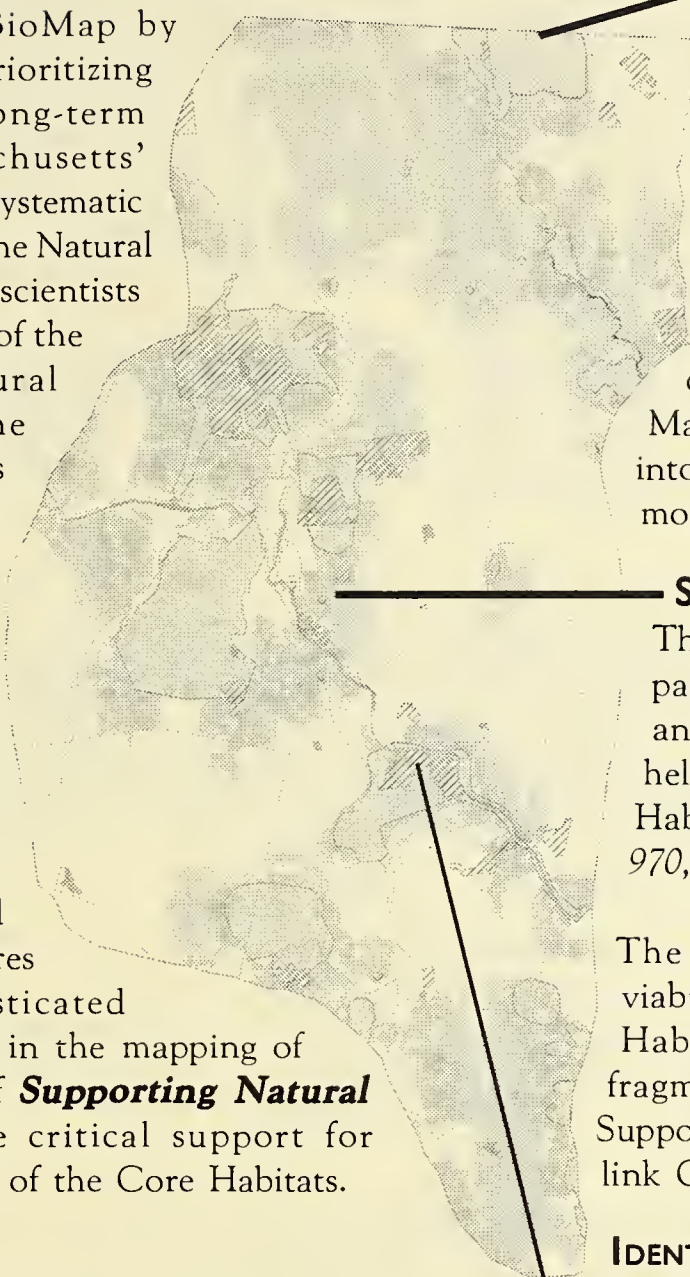
USING THE BIOMAP

The BioMap is a conservation planning tool and does not, in any way, supplant the Estimated Habitat or Priority Habitat maps which have regulatory significance under the Massachusetts Wetlands Protection Act and Endangered Species Act. Based on 22 years of NHESP data, it was created to help set land protection priorities to best protect the rich biodiversity of Massachusetts. Core Habitats are based on actual data points for rare species, and on natural community occurrences, and represent the areas most in need of conservation. Core Habitat areas should be the highest priority for protection. Supporting Natural Landscape areas are important to the viability of the full range of biodiversity in Massachusetts. These areas should be high priorities for protection as well.

GETTING THE BIOMAP

The BioMap Report is a **free** full-color, beautifully illustrated booklet that describes the project goals and methods. The Technical Report, also available upon request, contains a more detailed explanation of the BioMap methods and data, as well as an expanded bibliography. For copies of the BioMap Report, Technical Report, and/or the BioMap poster, contact Jessica Patalano at (508) 792-7270, ext. 300. View the BioMap on our website at www.state.ma.us/dfwele/dfw/nhesp

Example: Vermont Piedmont Ecoregion



CORE HABITAT

The sum total of the most viable rare plant and rare animal habitats and viable exemplary natural communities. *1.16 million acres identified statewide, or 23% of the state*

Core Habitats are the foundation of the BioMap. After separately mapping the most viable rare plants, rare animals, and natural communities currently known in Massachusetts, these data layers were combined into one, resulting in a map of Core Habitats for most of the biodiversity of Massachusetts.

SUPPORTING NATURAL LANDSCAPE

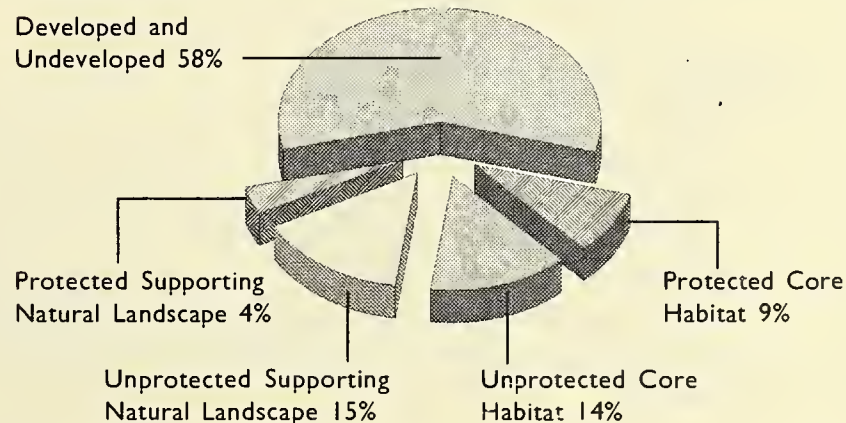
The combination of Core Habitat buffers, large patches of natural vegetation, large roadless areas, and undeveloped watersheds that together should help maintain the ecological integrity of the Core Habitat areas and thus enhance their conservation. *970,000 acres identified statewide, or 19% of the state.*

The BioMap seeks to safeguard the long-term viability of our biodiversity by surrounding Core Habitat areas, where possible, in a minimally fragmented or undisturbed matrix of vegetation. Supporting Natural Landscapes serve to buffer and link Core Habitat patches.

IDENTIFYING UNPROTECTED BIODIVERSITY

An important analysis of BioMap polygons is the current extent of their protection. Using the data in the MA Geographic Information System (Mass GIS), protected open space parcels with relatively strong protection for biodiversity were overlain upon the Core Habitat and Supporting Natural Landscape polygons. The pie-chart below illustrates the current extent of protection for Core Habitat and Supporting Natural Landscape. An impressive amount of the land that is critical to protecting biodiversity is already in conservation, but much more remains to be done.

Massachusetts Land Area



New Initiatives

☛ Since the focus of BioMap was on upland and wetland species and communities, truly aquatic species, even rare species of floating-leaved or submerged vascular plants or rare species of freshwater mussels, crayfish or fish, were not included. Because aquatic biodiversity, although every bit as important, is, by-and-large, so much less well known it was decided that it could only be covered adequately in a subsequent project. Fortunately, thanks to funding provided by the Executive Office of Environmental Affairs, Natural Heritage has now embarked on an **Aquatic BioDiversity Project** to identify, evaluate and map the state's most important freshwater aquatic biodiversity at both the species and aquatic ecosystems level. Chloe Stuart, a limnologist, has recently been hired as the Project Manager of this companion project to BioMap. Another new staff member, Frances Garretson, is focusing on data on aquatic insects as our aquatic ecologist.

☛ In October we hosted a day-long meeting of scientists with expertise in a wide spectrum of aquatic macroinvertebrate animals. While also intended to identify conservation needs, it focused on revising, expanding and refining a draft Checklist of the Aquatic Macroinvertebrates of Massachusetts and Adjoining States recently prepared by Mark Chandler. The draft checklist contains a total of 1272 macroinvertebrate species known, or thought, to occur in Massachusetts waters. After the editing is complete, the NHESP plans to produce and distribute this species checklist for scientific and educational purposes.

☛ Natural Heritage is now preparing large GIS **Town BioMaps** for all towns that had Core Habitats identified during the BioMap project. As part of this effort Natural Heritage staff will be drafting descriptive paragraphs highlighting the ecological significance of most of the Core Habitat polygons and making this information widely available.

'Vernal Pools for Educators' Workshops

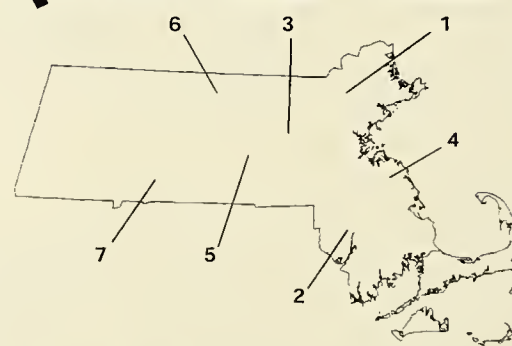
A free workshop for Massachusetts educators! With funding provided by EOE, the Natural Heritage Program, in cooperation with the Vernal Pool Association (www.vernalpool.org), will once again offer **Vernal Pools for Educators workshops** in the spring of 2002. Since 1999, over 300 classroom teachers and other educators have been introduced to vernal pools and their value as a teaching resource through these one-day workshops. Brochures will be sent out in January, and keep an eye on the NHESP and VPA websites for application information. Educators of all types are encouraged to apply for the limited slots, though preference will be given to teachers that are involved in classroom education.

Participants receive an incredible packet of educational resources:

- the VPA's *Diving Into Wicked Big Puddles* including 90 photographic slides, PowerPoint presentations, scripts, lesson concepts and more;
- NHESP's *A Field Guide to the Animals of Vernal Pools*
- Classroom sets of vernal pool wildlife posters;
- and MORE!

Choose to attend one of the following workshop dates:

1	March 20, Friday	Andover
2	March 29, Friday	Wilmington
3	April 2, Tuesday	Hudson
4	April 6, Saturday	Norwell
5	April 23, Tuesday	Westboro
6	April 29, Monday	Gardner
7	May 9, Thursday	Wilbraham



NHESP on the Web

The Natural Heritage Program's **internet website** is up and running! Our GIS Manager has worked hard to make the site easy to navigate and has filled it with useful information and downloadable material. Surf over to www.state.ma.us/dfwele/dfw/nhesp:

Heritage Program Overview

Research and Inventory

Learn about the various research and inventory work that the NHESP conducts and funds throughout MA.

Environmental Review

Reviewing potential impacts to rare species habitat from development projects is a critical function of the NHESP. Learn how the NHESP is involved and to what effect.

The NHESP has been involved with the protection of **vernal pools** since the late 1980's. Get information, resources and forms straight from the web, and learn about new initiatives in vernal pool protection and education.

The BioMap

NH&ES Advisory Committee

Land Protection

The NHESP is very active in identifying sites of interest for rare species and natural communities conservation. See what important lands have been protected and find other interesting information.

Information Resources

Find downloadable documents and other information.

Publications

Find out what's available from the NHESP bookshelf.

Weblinks

Find links to many other natural resource agencies and conservation organizations.

Within the last couple of years, the Natural Heritage & Endangered Species Program has produced several publications that should be of interest to the conservation community. In addition to the BioMap publication, technical report, and poster, we have produced several useful publications on various topics including vernal pools, the natural heritage of Massachusetts, and our diverse flora. A sampling of these publications includes:



A Field Guide to the Animals of Vernal Pools

By Leo P. Kenney and Matthew R. Burne

77 pages in full color, 5.5X8"

\$5 (bulk order discounts available)



The Vascular Plants of Massachusetts: A County Checklist

By Bruce A. Sorrie and Paul Somers, 2000

186 pages, \$5

Massachusetts Aerial Photo Survey of Potential Vernal Pools

By Matthew R. Burne

80 pages with data CD for PC, Free

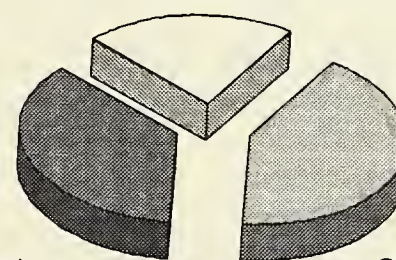
For more information on the publications available from the NHESP, call us or check out our website!
<http://www.state.ma.us/dfwele/dfw/nhesp/nhpubs.htm>

NHESP Budget Bits

As we go to press a final state budget for fiscal year 2002 (7/1/01 to 6/30/02) has still not been passed. However, in both earlier Senate and the House-passed versions, the two separate accounts, or "line items", that have supported the NHESP in recent years have now been combined into one new line item, #2310-0301. Not only will this make it much more efficient administratively but it will also make it much easier for people to identify, understand and support the Program's budget in the state's massive annual budget document. The Program's combined operating budget account is charged against three different funding sources. The legislature's conference committee budget earlier had set the Program's appropriation for fiscal year 2002 at \$794,466, although due to recent events and economic uncertainties it is still unclear what the final level of FY '02 funding may be. The latest information may be gleaned by visiting the Commonwealth's web site, www.state.ma.us/legis and looking for the line item number cited above in the fiscal year budget documents.

NHESP Funding Sources

Inland Fish and Game Fund
(hunting and fishing license fees)
22%



NHES Fund
(income tax form donations
and direct contributions)
36%

General Fund
42%

Although the depiction of endangered species might suggest otherwise, the proceeds from the colorful Right Whale license plates appearing on many Massachusetts cars **do not result in revenue for the state's endangered species program**. Contributions on state income tax forms, however, still comprise a key part of our operating budget (see graphic above). Contributions are now deductible on both state and federal income tax returns. Please join over 22,000 tax filers in donating annually to help ENDANGERED SPECIES CONSERVATION on your income tax form, or you can donate directly to the NHES Fund at the address below.

Thank you to all of you who have donated on your income tax form or directly to the Program. Your support of our work protect the state's endangered species and rare natural communities is very much appreciated.

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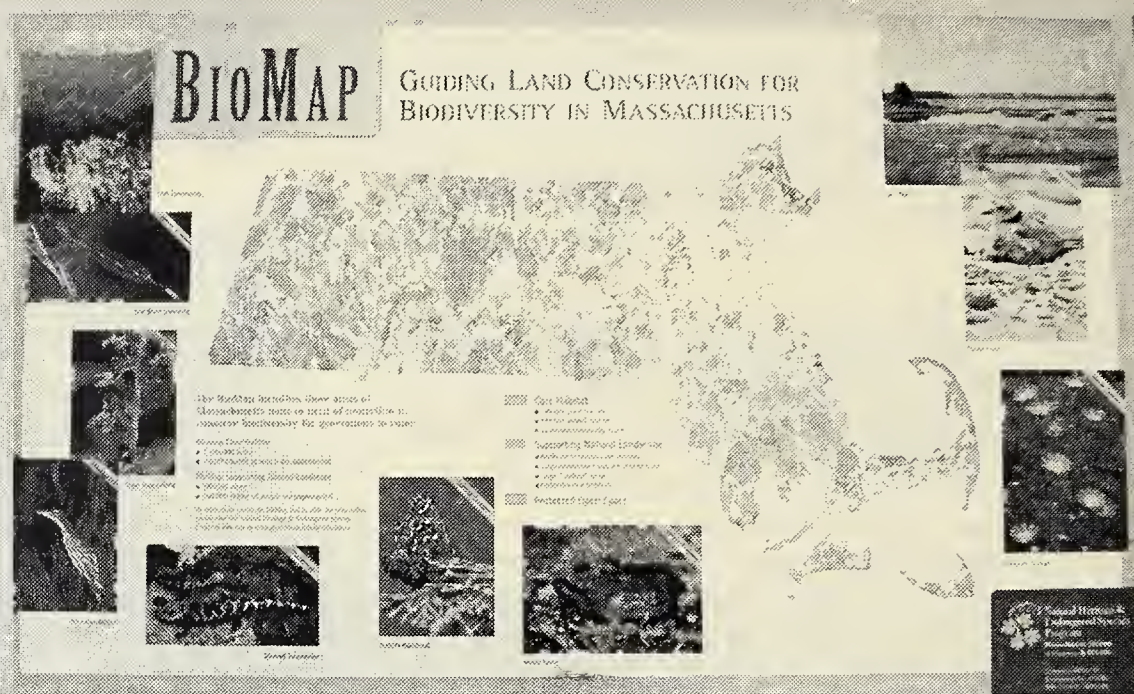
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NEW POSTER

BioMAP Guiding Land Conservation for Biodiversity in Massachusetts



The BioMap poster illustrates *Core Habitats* and *Supporting Natural Landscapes* along with protected open space, across the state. Beautiful photographs of rare plants, animals, and natural communities help bring to life the importance of guiding land conservation for biodiversity protection in Massachusetts.

Designed and Written by Matt Burne. Edited by Henry Woolsey and Claire Corcoran. Staff contributions by Amy Burnham, Tom French, Marea Gabriel, Lynn Harper, Patricia Huckery, Mike Nelson, Tim Simmons, Patricia Swain, David Szczebak, Henry Woolsey.



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GOVERNMENT DOCUMENTS
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